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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:	:
OLIVER HARNACK, ET AL.	: EXAMINER: YU, MELANIE J.
SERIAL NO.: 10/631,351	:
FILED: JULY 31, 2003	: GROUP ART UNIT: 1641
FOR: METHOD OF ATTACHING HYDROPHILIC SPECIES TO HYDROPHILIC MACROMOLECULES AND IMMOBILIZING THE HYDROPHILIC MACROMOLECULES ON A HYDROPHOBIC SURFACE	:

REPLY BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

In response to the Examiner's Answer dated July 24, 2008, please consider the following comments.

Claim 2 of the present application requires immobilizing hydrophilic macromolecules on a hydrophobic surface, and then exposing the immobilized macromolecules to hydrophilic species. No reference cited by the Examiner discloses this sequence of steps. The Examiner relies on Ford for its disclosure of immobilizing hydrophilic macromolecules on a hydrophilic surface, and then exposing the immobilized macromolecules to hydrophilic species. *See* Examiner's Answer, pages 4, 5, 7 and 8. That is, Ford is alleged to disclose a process similar to that in claim 2, but in which a hydrophilic substrate is used. The Examiner relies on Klein or Schueller to remedy this deficiency of Ford. *See* Examiner's Answer, pages 5 and 8.

One of ordinary skill in the art would not have been motivated to combine Ford and Klein or Schueller as the Examiner proposes, because there would have been no reason to expect success upon combining the references. *See* MPEP §2143.02. Hydrophilic species are known to adsorb irreversibly to hydrophobic substrates upon contact – that is, hydrophilic species demonstrate non-specific binding. *See generally* Caldwell, Fan. Accordingly, a skilled artisan would expect that if Ford were modified to use a hydrophobic substrate, the hydrophilic species would bind not only to the immobilized macromolecule but also to the hydrophobic substrate. *See, e.g.,* Appeal Brief, pages 6 to 7. A skilled artisan would expect that it would not be possible to confine the hydrophilic species to the locations of the immobilized macromolecule to create, e.g., nanowires, if a hydrophobic substrate were used in the process of Ford.

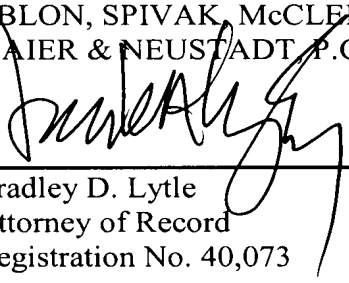
The Examiner argues that the teachings of Caldwell and Fan, which indicate that hydrophilic species bind non-specifically with hydrophobic substrates can be ignored. *See* Examiner's Answer, pages 11 to 12. The Examiner argues that Caldwell's teachings can be ignored because Caldwell indicates that antibodies and proteins bind non-specifically with hydrophobic substrates, and not nanoparticles as are used in Ford. *See* Examiner's Answer, page 11. The Examiner argues that Fan's teachings can be ignored because Fan indicates that hydrophilic nanoparticles bind to hydrophilic substrates as well as hydrophobic substrates. *See* Examiner's Answer, page 12. While the Examiner has certainly identified reasons why the teachings of Caldwell and Fan are not precisely synchronous with the teachings of Ford, the Examiner fails to consider the overall teaching of the references. *See, e.g.,* MPEP § 2141.01 (citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303 (Fed. Cir. 1983)) (prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention).

Caldwell teaches that hydrophilic species adsorb non-specifically to hydrophobic substrates. *See* Caldwell, column 1, lines 44 to 59. Fan teaches that the more hydrophobic a surface is, the greater the adsorption of hydrophilic gold particles to that surface. *See* Fan, FIG. 3. These references support Appellants' contention that a skilled artisan would expect that if Ford were modified to use a hydrophobic substrate, hydrophilic species would bind not only to the immobilized macromolecule but also to the hydrophobic substrate. The Examiner does not give proper weight to the overall teachings of Caldwell and Fan, and fails to provide a plausible counter-rationale for why one of ordinary skill in the art would expect success upon combining Ford with Klein or Schueller.

The references of record, when taken together, teach away from the combinations proposed by the Examiner. Accordingly, the rejections should be reversed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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